

An Overview of the US National Laboratories with an Emphasis on Materials Sciences

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Abstract

The role of the US National Laboratories is summarized from post World War II to the present time. The influence of the US federal government on the National Laboratories is reviewed with respect to: determining overall research strategies, various attempts to interact with industry (especially in recent years), building facilities that serve the nation, and developing leading edge research in the materials sciences. Despite reductions in support for research in the US in recent years, and uncertainties regarding the specific policies for R&D in the US, there are strong roles for materials research at the national laboratories. These will be centered on their unique ability to field multidisciplinary teams, a focus on areas of strength within each of the laboratories, through the use of unique cutting edge facilities, and through increased teaming.

The work at the national laboratories is differentiated from that which can be performed at universities or by industry. It is proposed that there are at least five characteristics to a successful approach for the future of the national laboratories, and therefore to the future of the materials science research carried out within them. First, they must take advantage of their unique ability to perform multidisciplinary work; this ability is well recognized and distinguishes them from other research institutes. Second, they need to utilize their world class major facilities which, as will be described, are extensive. Third, they must build upon their own individual strengths, i.e. their own world class research areas or core competencies. Fourth, they must team effectively with other laboratories, universities, industry, and international partners where appropriate. Fifth, and very importantly, their research areas must have a significant component of "inspired" versus "inspirational" research without becoming caught in the trap of performing only applied or needs-driven research.

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